Investigation 2

Exploring Linear Functions With Graphs and Tables

In the last investigation, you examined relationships that were linear functions. For example, the *distance* a person walks at a constant rate is a function of the amount of *time* a person walks. The *amount of money* a person collects from a walkathon sponsor who pays a fixed amount per *kilometer* is a function of the distance walked. You used tables, graphs, and equations to answer questions about these relationships.

In this investigation, you will continue to solve problems involving linear functions.

2.1 Walking to Win

In Ms. Chang's class, Emile found out that his walking rate is 2.5 meters per second. When he gets home from school, he times his little brother Henri as Henri walks 100 meters. He figured out that Henri's walking rate is 1 meter per second.

Problem 2.1 Finding the Point of Intersection

Henri challenges Emile to a walking race. Because Emile's walking rate is faster, Emile gives Henri a 45-meter head start. Emile knows his brother would enjoy winning the race, but he does not want to make the race so short that it is obvious his brother will win.

A. How long should the race be so that Henri will win in a close race?

B. Describe your strategy for finding your answer to Question A. Give evidence to support your answer.

ACE Homework starts on page 31.

2.2 Crossing the Line

Your class may have found some very interesting strategies for solving Problem 2.1, such as:

- Making a table showing time and distance data for both brothers
- Graphing time and distance data for both brothers on the same set of axes
- Writing an equation for each brother representing the relationship between time and distance

How can each of these strategies be used to solve the problem?

What other strategies were used in your class?